

ABSTRACT

A hybrid electric propulsion system for powering a vehicle using a natural fuel engine and an electric motor. The hybrid electric vehicle is comprised of a drive train; an electric motor for driving the drive train; an auxiliary power unit (APU); an electric energy storage system electrically coupled to the electric motor; and wherein the auxiliary power unit and the electric energy storage system provide energy for powering the vehicle. An electric bus is directly connected to both the auxiliary power unit and the electric energy source and the voltage across the electric bus is substantially the same as the voltage across the electric energy source so that a change in voltage of the electric bus results in the same change to the voltage across the electric energy source. A power management controller is programmed to control output power of the power unit to maintain the energy storage system between a predetermined high voltage set-point and a predetermined low voltage set-point.